

Lessons Learned from a Delayed Exothermic Decomposition—Amine Neutralizations with Strong, Oxidizing Acids

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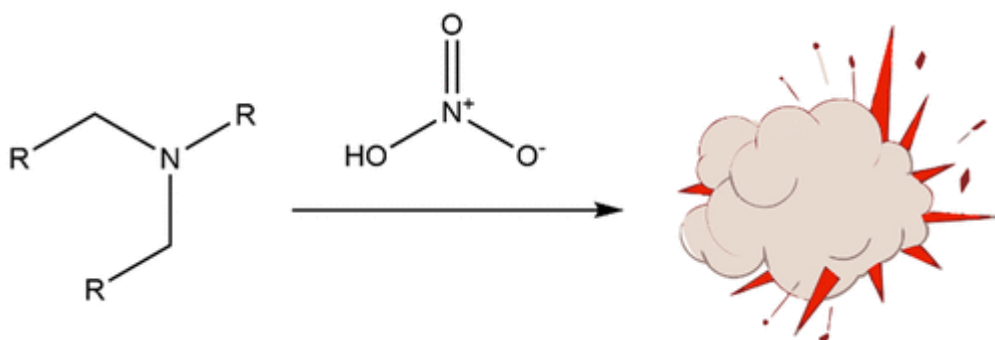
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Abstract



Industrial amines are combined with acids in concentrated forms for various applications. Recently, an explosion occurred when a scientist was screening different acids and selected concentrated nitric acid to mix with an aliphatic amine. This Case Study describes the incident and aftermath, the chemistry behind the incident, and a short review of the hazards of mixing oxidizing acids with amines, with a focus on hypergolic fuels. An SOP with recommended reaction setup is described as well as corrective actions that were identified after a safety review.